

WHAT IS CLAIMED IS:

1. A scanning exposure apparatus for transferring a pattern of a master onto each shot region while synchronously scanning the master and a substrate on which a plurality of shot regions are arrayed,  
5 comprising:
  - a master stage for moving the master;
  - a substrate stage for moving the substrate; and
  - a controller for controlling movement of said

10 substrate stage over a plurality of shot regions so as to assure a setting distance serving as a distance for scanning and moving said substrate stage at a uniform velocity in order to guarantee that synchronization error between said master stage and said substrate

15 stage falls within an allowable range after said substrate stage is accelerated up to a scan speed for scanning exposure,

wherein said controller controls the movement of said substrate stage such that a setting distance for a  
20 first shot region to be scanned and exposed upon a change in row to which a shot region of an exposure object belongs is set longer than a setting distance for other shot regions.

2. The apparatus according to claim 1, wherein said controller controls the continuous movement of said substrate stage in accordance with a common setting distance for shot regions other than the first shot
- 25

region to be scanned and exposed among a plurality of shot regions belonging to one row.

3. The apparatus according to claim 1, wherein said controller controls the continuous movement of said  
5 substrate stage in accordance with a setting distance determined for each row to which a plurality of shot regions belong.

4. The apparatus according to claim 1, wherein the setting distance is determined on the basis of a  
10 setting time until synchronization error between said master stage and said substrate stage falls within an allowable range after said substrate stage is accelerated up to a scan speed for scanning exposure.

5. A scanning exposure apparatus for transferring a  
15 pattern of a master onto each shot region while synchronously scanning the master and a substrate on which a plurality of shot regions are arrayed,  
comprising:

a master stage for moving the master;  
20 a substrate stage for moving the substrate; and  
a controller for controlling movement of said substrate stage for a plurality of shot regions so as to assure a setting distance serving as a distance for scanning and moving said substrate stage at a uniform  
25 velocity in order to guarantee that synchronization error between said master stage and said substrate stage falls within an allowable range after said

substrate stage is accelerated up to a scan speed for scanning exposure,

wherein said controller controls movement of said substrate stage in accordance with a setting distance determined for each row to which a plurality of shot regions belong.

6. The apparatus according to claim 5, wherein the setting distance is determined on the basis of a setting time until synchronization error between said master stage and said substrate stage falls within an allowable range after said substrate stage is accelerated up to a scan speed for scanning exposure.

7. A scanning exposure method of transferring a pattern of a master onto each shot region while synchronously scanning the master and a substrate on which a plurality of shot regions are arrayed, comprising:

the control step of controlling movement of a substrate stage for a plurality of shot regions so as to assure a setting distance serving as a distance for scanning and moving the substrate stage at a uniform velocity in order to guarantee that synchronization error between a master stage and the substrate stage falls within an allowable range after the substrate stage is accelerated up to a scan speed for scanning exposure,

wherein in the control step, the movement of the

substrate stage is controlled such that a setting distance for a first shot region to be scanned and exposed upon a change in row to which a shot region of an exposure object belongs is set longer than a setting 5 distance for other shot regions.

8. The method according to claim 7, wherein in the control step, the continuous movement of said substrate stage is controlled in accordance with a common setting distance for shot regions other than the first shot 10 region to be scanned and exposed among a plurality of shot regions belonging to one row.

9. The method according to claim 7, wherein in the control step, the continuous movement of said substrate stage is controlled in accordance with a setting 15 distance determined for each row to which a plurality of shot regions belong.

10. The method according to claim 7, wherein the setting distance is determined on the basis of a setting time until synchronization error between the 20 master stage and the substrate stage falls within an allowable range after the substrate stage is accelerated up to a scan speed for scanning exposure.

11. A scanning exposure method of transferring a pattern of a master onto each shot region while 25 synchronously scanning the master and a substrate on which a plurality of shot regions are arrayed, comprising:

the control step of controlling movement of a substrate stage for a plurality of shot regions so as to assure a setting distance serving as a distance for scanning and moving the substrate stage at a uniform  
5 velocity in order to guarantee that synchronization error between a master stage and the substrate stage falls within an allowable range after said substrate stage is accelerated up to a scan speed for scanning exposure,

10 wherein in the control step, movement of the substrate stage is controlled in accordance with a setting distance determined for each row to which a plurality of shot regions belong.

12. The method according to claim 11, wherein the  
15 setting distance is determined on the basis of a setting time until synchronization error between the master stage and the substrate stage falls within an allowable range after said substrate stage is accelerated up to a scan speed for scanning exposure.

20 13. A semiconductor device manufacturing method comprising the steps of:

installing manufacturing apparatuses for various processes including the scanning exposure apparatus defined in claim 1 in a semiconductor manufacturing  
25 factory; and

manufacturing a semiconductor device in a plurality of processes by using the manufacturing

apparatuses.

14. The method according to claim 13, further comprising the steps of:

connecting the manufacturing apparatuses by a  
5 local area network; and  
communicating information about at least one of  
the manufacturing apparatuses between the local area  
network and an external network of the semiconductor  
manufacturing factory.

10 15. The method according to claim 13, further comprising the step of acquiring maintenance information of the scanning exposure apparatus by accessing a database provided by a vendor or user of the scanning exposure apparatus via the external  
15 network.

16. A semiconductor manufacturing factory comprising:  
manufacturing apparatuses for various processes including the scanning exposure apparatus defined in  
claim 1;  
20 a local area network for connecting said manufacturing apparatuses; and  
a gateway for allowing the local area network to access an external network of the factory,  
wherein information about at least one of said  
25 manufacturing apparatuses is communicated.

17. A maintenance method for the scanning exposure apparatus defined in claim 1 that is installed in a

semiconductor manufacturing factory, comprising the steps of:

causing a vendor or user of the scanning exposure apparatus to provide a maintenance database connected

5 to an external network of the semiconductor manufacturing factory;

authenticating access from the semiconductor manufacturing factory to the maintenance database via the external network; and

10 transmitting maintenance information accumulated in the maintenance database to the semiconductor manufacturing factory via the external network.

18. The apparatus according to claim 1, further comprising:

15 a display;

a network interface; and

a computer for executing network software,

wherein maintenance information of the scanning exposure apparatus can be communicated via a computer network.

20 19. The apparatus according to claim 18, wherein the network software is connected to an external network of a factory where the scanning exposure apparatus is installed, provides on said display a user interface

25 for accessing a maintenance database provided by a vendor or user of the scanning exposure apparatus, and enables obtaining information from the database via the

external network.

20. A semiconductor device manufacturing method comprising the steps of:

installing manufacturing apparatuses for various processes including the scanning exposure apparatus defined in claim 5 in a semiconductor manufacturing factory; and

manufacturing a semiconductor device in a plurality of processes by using the manufacturing apparatuses.

21. The method according to claim 20, further comprising the steps of:

connecting the manufacturing apparatuses by a local area network; and

15 communicating information about at least one of the manufacturing apparatuses between the local area network and an external network of the semiconductor manufacturing factory.

22. The method according to claim 21, further comprising the step of acquiring maintenance information of the scanning exposure apparatus by accessing a database provided by a vendor or user of the scanning exposure apparatus via the external network.

25 23. A semiconductor manufacturing factory comprising:  
manufacturing apparatuses for various processes including the scanning exposure apparatus defined in

claim 5;

a local area network for connecting said manufacturing apparatuses; and

5 a gateway for allowing the local area network to access an external network of the factory,

wherein information about at least one of said manufacturing apparatuses is communicated.

24. A maintenance method for the scanning exposure apparatus defined in claim 5 that is installed in a

10 semiconductor manufacturing factory, comprising the steps of:

causing a vendor or user of the scanning exposure apparatus to provide a maintenance database connected to an external network of the semiconductor

15 manufacturing factory;

authenticating access from the semiconductor manufacturing factory to the maintenance database via the external network; and

transmitting maintenance information accumulated 20 in the maintenance database to the semiconductor manufacturing factory via the external network.

25. The apparatus according to claim 5, further comprising:

a display;

25 a network interface; and

a computer for executing network software,

wherein maintenance information of the scanning

exposure apparatus can be communicated via a computer network.

26. The apparatus according to claim 5, wherein the network software is connected to an external network of  
5 a factory where the scanning exposure apparatus is installed, provides on said display a user interface for accessing a maintenance database provided by a vendor or user of the scanning exposure apparatus, and enables obtaining information from the database via the  
10 external network.